

Energy (Physical Science Unifying Concept C)

The total energy of the universe is constant. All events involve the transfer of energy in one form or another. In all energy transfers, the overall effect is that the energy is spread out uniformly.

By the end of the grade band:		By the end of the grade band, students know and are able to do everything required in earlier grades and:		By the end of grade band, students know and are able to do everything required in earlier grades and:		By the end of grade band, students know and are able to do everything required in earlier grades and:		
Grades K - 2		Grades 3 - 5		Grades 6 - 8		Grades 9 - 12		
P.2.C	Students know heat, light, and sound can be produced.	P.5.C	Students understand that energy exists in different forms.	P.8.C	Students understand transfer of energy.	P.12.C	Students understand that there are interactions between matter and energy.	
		P.5.C.1	Students know light can be described in terms of simple properties (e.g., color, brightness, reflection). I/S	P.8.C.1	Students know visible light is a narrow band within the electromagnetic spectrum. I/S	P.12.C.1	Students know waves (I.e. sound, seismic, electromagnetic) have energy that can be transferred when the waves interact with matter. E/S	Waves
P.2.C.1	Students know sound is produced by vibrating objects. I/L	P.5.C.2	Students know the wave characteristics of sound. E/S	P.8.C.2	Students know vibrations (e.g., sounds, earthquakes) move at different speeds in different materials, have different wavelengths, and set up wave-like disturbances that spread away from the source uniformly. E/S			
P.2.C.2	Students know objects can be described as hot or cold relative to another object. I/L	P.5.C.3	Students know heat is often produced as a byproduct when one form of energy is converted to another form (e.g., when machines and living organisms convert stored energy to motion). E/S	P.8.C.3	Students know physical, chemical, and nuclear changes involve a transfer of energy. E/S	P.12.C.2	Students know energy forms can be converted. E/S	Forms and Uses of Energy
				P.8.C.4	Students know energy cannot be created or destroyed, in a chemical or physical reaction, but only changed from one form to another. E/S	P.12.C.3	Students know nuclear reactions convert a relatively small amount of material into a large amount of energy. I/S	
		P.5.C.4	Students know heat can move from one object to another by conduction, and some materials conduct heat better than others. E/S			P.8.C.5	Students know heat energy flows from warmer materials or regions to cooler ones through conduction, convection, and radiation. E/S	
		P.5.C.5	Students know the organization of a simple electrical circuit (i.e., battery or generator, wire, a complete loop through which the electrical current can pass). I/L	P.8.C.6	Students know electrical circuits provide a means of transferring electrical energy to produce heat, light, sound, and chemical changes. I/S	P.12.C.5	Students know the relationship between heat and temperature . I/S	Electricity
						P.12.C.6	Students know electricity is transferred from generating sources for consumption and practical uses. I/S	